

## CLAIMS

1. A power supply comprising:

a pair of first and second capacitors forming a capacitive voltage divider;

5 a source of a periodic input supply voltage coupled to said capacitive voltage divider for producing in said second capacitor from a portion of said periodic input supply voltage, a second supply voltage that is coupled to a load circuit; and

a switch coupled to said second capacitor for selectively coupling said first capacitor to said second capacitor in a manner to regulate said second supply voltage.

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2. The power supply of claim 1, wherein said switch is coupled to said second capacitor for selectively coupling said first capacitor to said second capacitor in a negative feedback manner to regulate said second supply voltage.

15 3. The power supply of claim 1, wherein the switch is responsive to a control signal from a control circuit which senses said second supply voltage and compares said sensed voltage with a reference voltage, for selectively coupling said first capacitor to said second capacitor.

4. The power supply of claim 1, wherein said switch is coupled between said first and  
20 second capacitors and responsive to a control signal from a control circuit for selectively coupling said first and second capacitors.

5. The power supply of claim 1, wherein the switch comprises a shunt circuit across said second capacitor for selectively coupling said first and said second capacitors.

6. The power supply of claim 1, wherein the switch comprises at least one transistor.
7. The power supply of claim 1, wherein a first diode is coupled between the first and second capacitors, and wherein said second capacitor has a first terminal coupled to a  
5 reference potential.
8. The power supply of claim 7, wherein a second diode is coupled between the first capacitor and said reference potential.
- 10 9. The power supply of claim 1, wherein the source of periodic input supply voltage comprises an AC source coupled to a rectifier.
10. The power supply of claim 1, wherein said switch selectively couples said first and second capacitors according to a control signal for one of: a) regulating a charging of said  
15 second capacitor; and b) regulating a discharging of said second capacitor.
11. The power supply of claim 1, wherein said switch varies a charge transfer between the first and second capacitors when one of said first and second capacitors is charged in a first direction, and is prevented from varying a charge transfer between first and second capacitors  
20 when said one of said first and second capacitors is charged in a second direction opposite said first direction.
12. A power supply, comprising:  
a first capacitor;

a second capacitor that is selectively coupled to the first capacitor to form a capacitive voltage divider;

a control circuit coupled to said second capacitor for sensing the voltage across one of said first and second capacitors and for controllably coupling the first and second capacitors.

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13. The power supply of claim 12, further comprising at least one switch coupled between said first and second capacitors and responsive to a control signal from the control circuit for selectively coupling said first and second capacitors.

10 14. The power supply of claim 13, wherein the at least one switch comprises one or more transistors.

15. The power supply of claim 12, further comprising a first rectifier having a first terminal coupled to said first capacitor, and a second terminal coupled to said second  
15 capacitor, and a switch having a terminal coupled to said first terminal of said first rectifier.

16. The power supply of claim 15, wherein said switch further comprises a second terminal coupled to said second terminal of said first rectifier.

20 17. The power supply of claim 16, wherein said switch comprises one or more transistors.

18. The power supply of claim 16, further comprising a second rectifier coupled in parallel with said switch.

19. The power supply of claim 12, wherein the second capacitor provides a discharge current through said controller.